

### **REMARKS**

Applicant's invention enables a data broadcast program to quickly and efficiently incorporate interactive operations during the broadcast period of a specific program. According to the invention, a specific program is scheduled to be transmitted, not at the reproduction time, but prior to the reproduction time of the specific program. This allows the receiver to acquire and save the specific program prior to the reproduction time. Thus when a viewer makes an interactive content selection the receiver is able to reproduce the content without having to wait to receive the specific program at the beginning of the reproduction time period. Since speed and efficiency are crucial, it is important to conserve transmission bandwidth and efficiently cache received specific program data for faster reproduction. Applicant's invention enables a user to fine-tune the caching frequency. Efficient caching enables the CPU to more quickly access and reproduce the cached specific program. Efficient caching also increases the throughput that the CPU can handle. Applicant's invention can utilize this additional throughput to, among other things, handle higher resolution video data or accommodate more complex interactive operations.

Claims 11-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,374,405 ("*Willard*") in view of U.S. Patent No. 5,448,568 ("*Delpuch*"). Applicant respectfully traverses.

Claims 11 and 13-15 have been amended to recite that Applicant's invention features a scheduling unit having a generation unit operable to generate (a) first messages which designate the receiving apparatus to store the specific program in a storing unit within the receiving apparatus and (b) a second message which designates the receiving apparatus to reproduce the specific program stored in the storing unit. Also, the transmission unit repeatedly transmits (a) the first messages for

a duration from the transmission starting time to the transmission finishing time of the specific program, wherein the first messages are transmitted separately from data modules containing data of the specific program, and (b) the second message in the reproduction time period of the specific program.

Transmitting the first messages separately from data modules containing data of the specific program provides flexibility as to how frequently the data modules are cached. If a data module is split up into a series of packets, these packets may be cached periodically as they are received, as opposed to waiting until all of the packets are received and then caching the entire series of packets at once. The caching frequency may therefore be fine-tuned as needed to efficiently cache any available packets and to best utilize available CPU clock cycles, providing a means of further optimizing Applicant's invention.

*Willard* discloses that a data module 51 may be split into a series of transmission units 54 which can further be split into a series of packets. The header packet 58 of each transmission unit 54 may be capable of generating an interrupt enabling the CPU to determine where the data module 51 should be cached. *See Willard*, Column 7, Lines 60-65. *Willard* also discloses that a data module may be transmitted cyclically. *See Willard*, Column 6, Lines 25-27. Thus, *Willard* does not teach or suggest that messages for instructing the receiver to cache the data module containing data of the specific program are transmitted separately from the data module because header packet 58 is part of data module 51.

In *Willard*, the caching frequency will depend on the number of transmission units that each data module comprises and on the cyclic rate of transmission for each data module. As a result, the caching frequency may vary dramatically from one data module to another. In some instances, the data module may be cached too frequently and in other instances, the data module

may not be cached frequently enough. If the caching frequency is too high, then the CPU may be wasting valuable clock cycles, but if the caching frequency is too low, then there is an elevated risk of losing packets. In order to modulate the caching frequency, the invention disclosed by *Willard* will need to modify the number of packets that each transmission unit comprises and the cyclic rate of transmission for each data module, which both affect the amount of transmission bandwidth required. Increasing the number of packets will increase the number of headers and will therefore increase the amount of transmission bandwidth required because each header takes up additional bandwidth. Increasing the cyclic rate of transmission will increase the number of times each data module is transmitted and will therefore also require additional transmission bandwidth.

In contrast, Applicant's invention bifurcates the caching frequency from the number of packets that each data module may be broken into and the cyclic rate of transmission for each data module and allows the caching frequency to be fine-tuned as needed without impacting the transmission bandwidth. Thus, Applicant's invention can use a control script to establish a constant caching frequency, or may engineer an algorithm so that the CPU may cache specific program data modules faster or slower depending on how much transmission bandwidth is used and implement this caching algorithm with a control script. This provides Applicant's invention with another means of optimizing its data broadcast program.

In addition, *Willard* discloses that the header packet 58 of each transmission unit 54 may be capable of generating an interrupt enabling the CPU to determine where the data module 51 should be cached. *See Willard*, Column 7, Lines 60-65. This implies that the header packet 58 only contains a caching instruction for a particular data module. Thus, in an interactive television system where multiple data modules are transmitted concurrently, the CPU must read

every received packet to determine which data module it is associated with and only cache the packets corresponding to that particular data module. This may also require each packet to contain additional information regarding caching instructions, further increasing transmission bandwidth. In contrast, Applicant's invention allows the CPU to simply cache all received packets regardless of the associated data modules. This advantage saves valuable processing time and allows Applicant's invention to more efficiently cache a specified program.

According to *Delpuch*, prepacketed signal modules may be inserted at interfaces between program segments of an edited program product. See *Delpuch*, Column 11, Lines 51-55. Therefore, *Delpuch* does not teach or suggest that a prepacketed signal module, or a second message instructing the receiver to reproduce a specific program, will be transmitted during the reproduction time period of a specific program. Rather, *Delpuch* expressly states that second messages are only transmitted between the reproduction time periods of specific programs.

In contrast, Applicant's invention repeatedly transmits the second messages during the reproduction time period of the specific program, ensuring that the cached specific program is reproduced at specific times.

Claim 12 depends from claim 11 and is seen as allowable for the reasons stated above for the patentability of claim 11.

Applicant respectfully requests that this rejection be withdrawn.

Claims 16-18 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,374,405 ("*Willard*"). Applicant respectfully traverses.

"An anticipating reference must describe the patented subject matter with sufficient clarity and detail to establish that the subject matter existed in the prior art and that such existence would be recognized by persons of ordinary skill in the field of the invention." See *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990); *Diversitech Corp. v.*

*Century Steps, Inc.*, 850 F.2d 675, 678, 7 USPQ2d 1315, 1317 (Fed. Cir. 1988).

Claim 16 has been amended to recite that the scheduling unit generates (a) first messages which designate the receiving apparatus to store the specific program in a storing unit within the receiving apparatus, wherein the first messages are transmitted separately from data modules containing data of the specific program and (b) a second message which designates the receiving apparatus to reproduce the specific program stored in the storing unit. Claim 16 is therefore seen as allowable for the reasons stated above for the patentability of claims 11-15.

Claims 17-18 depend from claim 16 and are seen as allowable for the reasons stated above for the patentability of claim 16.


Applicant respectfully requests that this rejection be withdrawn.

For the reasons stated above, Applicant now believes the application is in condition for allowance and early notification of the same is respectfully requested.

If the Examiner believes a further telephone conference would assist in the prosecution, the undersigned attorney can be contacted at the listed phone number.

Very truly yours,

**SNELL & WILMER L.L.P.**

  
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